

A2 [0031] In addition, as the ascending/descending guide means for maintaining the clearance (i.e., for maintaining and holding the clearance of the cutting blades), the guide bearings 40a and 40b are provided between the lower holder (lower blade portion) 8 and the upper holder (upper blade portion) 11 and the two guide units composed of guide shafts 41 and 42 formed so as to be guided by these bearings and movable in the vertical direction are provided.

Paragraph [0049] at page 13:

A3 [0049] FIG. 5 is a frontal view of a cutting apparatus for a welding machine according to ^a [the] third embodiment of the present invention; ←

Paragraph [0055] at page 14:

A4 [0055] FIG. 11 is a cross-sectional view of a sixth embodiment of the present invention corresponding to FIG. 2;

Paragraph [0063] at page 15:

A5 [0063] On the other hand, on the side of the upper blade portion, a guide unit as the ascending/descending guide means composed of a guide bearing 26a mounted on the carriage C frame 5 as the apparatus frame and a guide shaft 27a guided by the guide bearing 26a for guiding

a⁵ one end of an upper blade holder 50 movably in the vertical direction is provided at one end side of the upper blade holder 50 as the upper blade portion.

✓
Paragraph [0072] at page 17:

a⁶ [0072] In this hydraulic drive means, a trunnion portion of a hydraulic trunnion type cylinder 53 is coupled rotatably with a shaft 52 fitted in a bracket 51 mounted on the top surface side of the carriage C frame 5 as the apparatus frame, and at the same time, a link 56 constituting the upper blade portion ascending/descending link means is coupled rotatably with a tip end member 54 made of metal mounted at a tip end of a piston rod of the above-described hydraulic trunnion type cylinder 53 and a shaft 55 fitted in the tip end member [made by metal 54]. } ←

✓
Paragraph [0077] at page 19:

a⁷ [0077] In this first embodiment, since an upper holder 50 as the upper blade portion may be held and moved up and down by the two ascending/descending means of the guide shaft 27a and the guide bearing 26a, it is possible to reduce the number of the guide units as the ascending/descending means by one. It is easy to perform the maintenance and confirmation work in comparison with the conventional work for adjusting the three guide units as the ascending/descending means.

Paragraph [0078] at page 19:

Q8 [0078] Also, the hydraulic drive means is provided additionally to the link 56 constituting the upper blade portion ascending/descending link means of the ascending/descending means to form the hydraulic circuit as a control circuit composed of the hydraulic trunnion type cylinder 53 as the above-described hydraulic drive means, its pipe 59, the opening/closing valve (solenoid valve) 58 and the like. Accordingly, for instance, even if the self-holding function is eliminated due to the absence of the pneumatic pressure, it is possible to maintain the up-and-down operation by the above-described hydraulic drive means composed of the hydraulic trunnion type cylinder 53 and the opening/closing valve 58, and in addition, it is possible to stop the operation of the upper holder 50 as the upper blade portion. Accordingly, it is possible to provide circumstances that are very effective for the maintenance and adjustment work.

Paragraph [0083] at page 21:

Q9 [0083] Incidentally, in Figs. 5 to 8, the same reference numerals are used to indicate the same components or members as those in the first to third embodiments (Figs. 1 to 4). Accordingly, the explanation therefor will be omitted.

Paragraph [0087] at page 22:

Q10 [0087] Namely, the upper blade holder 50 is fitted to the guide shaft 49 fixed by the bracket 47 and the bracket 48 mounted on the above-described carriage C frame 5 and is guided

aw by the guide shaft 49 movably in the vertical direction in the same manner as in Fig. 4. This co-use ascending/descending guide means has the same structure as that of the foregoing embodiments.

Paragraph [0093] at page 23:

a11 [0093] A shaft 34a and a shaft 34b are provided to a link 33 constituting the upper blade portion ascending/descending link, and the link(62) and the link 28a are coupled rotatably with the shaft 34a and the link 28b and the link 30b are coupled rotatably with the shaft 34b to form the parallel link mechanism.

Paragraph [0112] at page 26:

a12 [0112] The piston rod 82 is supported to be movable up and down by a guide member 81 within the upper blade holder 50 as the upper blade portion or within a guide member 80 within the carriage C frame 5.

Paragraph [0114] at page 26:

a13 [0114] According to the fourth embodiment, it is possible to dispense with the guide bearing for the upper blade holder 50. Namely, prior to the start of the cutting operation, the piston rod 82 of the guide hydraulic cylinder 83 is lowered and inserted into the guide bearing 12a.

Paragraph [0118] at page 27:

a14 [0118] According to the fifth embodiment, it is possible to dispense with the guide bearing for the upper blade holder 50 as the upper blade portion.

Paragraph [0119] at page 28:

a15 [0119] Namely, in Fig. 10 the upper blade holder 50 is guided by the piston rod of the hydraulic cylinder 60 as the hydraulic drive means for maintaining the position and the guide shaft 49 of the co-use ascending/descending guide means and may be moved up and down by the cylinder 37 as the ascending/descending drive means.

Paragraph [0121] at page 28:

a16 [0121] However, when necessary, for example, in the case where the electric supply is interrupted due to the stop of the electric supply, the solenoid valve S8 is closed so that the hydraulic cylinder 60 does the self-holding function. As a result, the upper blade holder 50 is held in place.

IN THE CLAIMS:

The claims are amended as follows: